WHAT IS CLAIMED IS:

1. A hybrid protein comprising two different coexpressed amino acid sequences forming a heterodimer, each comprising:

(a) at least one amino acid sequence selected from the group consisting of a chain of a homomeric-receptor, a chain of a heteromeric receptor, a ligand other than a gonadotropin, a fragment of said chain of said homomeric receptor, said chain of said heteromeric receptor, or said ligand, wherein said ligand or fragment thereof retains ligand-receptor binding capability and said chain of said homomeric receptor or fragment thereof, and said chain of said heteromeric receptor or fragment thereof retain ligand-receptor binding capability either alone or in association with a homologous or heterologous chain of said receptor; and

(b) a natural heterodimeric scaffold corresponding to a subunit of a circulating non-immunoglobulin protein with a long half-life, or a fragment thereof which retains the ability of the subunit to form a heterodimer with other subunits thereof;

wherein sequences (a) and (b) are joined either directly or through a peptide linker, and in which the sequences (b) in each of said two coexpressed sequences aggregate with each other to dimerize and form a heterodimer.

2. A hybrid protein in accordance with claim 1, wherein said sequence (a) is selected from the group consisting of TNF Binding Protein 1 (TBP1), TNF Binding Protein 2 (TBP2) or a fragment of said TBP1 or TBP2 still containing the ligand binding domain; the extracellular domain of the IFNα/β receptor or the IFNγ receptor; a gonadotropin receptor or extracellular fragments thereof; and IL-6, IFNβ, thromhopoietin (TPO) or fragments thereof.

3. A hybrid protein in accordance with claim 1, wherein sequence (a) is joined, either directly or via a linker, to the amino terminus of sequence (b).

4. A hybrid protein in accordance with claim 1, wherein sequence (a) is joined, either directly or via a linker, to the carboxy terminus of sequence (b).

5. A hybrid protein in accordance with claim 1, wherein said two coexpressed amino acid sequences each include the sequence for TBP1 or a fragment thereof having amino acid residues 20-161 or 20-190 of TBP1, as sequence (a), wherein said two coexpressed amino acid sequences form a heterodimer through sequence (b).

6. A hybrid protein in accordance with claim 1, wherein said two coexpressed amino acid sequences each include the extracellular domain of a gonadotropin receptor as sequence (a),

wherein said two coexpressed amino acid sequences form a heterodimer through sequence (b).

7. A hybrid protein in accordance with claim 7, wherein said sequence (a) is the FSH receptor extracellular domain.

8. A hybrid protein in accordance with claim 6, wherein said sequences (a) and (b) are linked with a peptide linker.

9. A hybrid protein in accordance with claim 8, wherein said peptide linker has an enzyme cleavage site.

10. A hybrid protein in accordance with claim 9, wherein said enzyme cleavage site is a thrombin cleavage site.

11. A hybrid protein in accordance with claim 9, wherein said enzyme cleavage site is recognized and cleaved by an enzyme which is found in the ovary.

12. A hybrid protein in accordance with claim 8, wherein said peptide linker serves as a flexible hinge.

13. A pharmaceutical composition comprising a hybrid protein in accordance with claim 1 and a pharmaceutically acceptable carrier and/or excipient.

14. The hybrid protein of claim 1, wherein each of said two coexpressed amino acid sequences forming a heterodimer consists essentially of sequences (a) and (b).

15. A method for inducing follicular maturation, comprising administering to a subject in need thereof a hybrid protein comprising two coexpressed amino acid sequences forming a

dimer, each comprising FSH receptor extracellular domain and a subunit of FSH, wherein the FSH receptor extracellular domain and the subunit of FSH are bonded together directly or through a peptide linker, and in which each FSH subunit in each of said coexpressed sequences are capable of aggregating to form a dimer complex.

16. The method of claim 15, wherein the FSH receptor extracellular domain is linked to the amino terminus of the FSH subunit.

17. The method of claim 15, wherein the FSH receptor extracellular domain and the subunit of FSH are linked through a peptide linker.

18. The method of claim 17, wherein the peptide linker has an enzyme cleavage site.

19. The method of claim 18, wherein the enzyme cleavage site is a thrombin cleavage site.

20. The method of claim 17, wherein the peptide linker serves as a flexible hinge.